

IMPLEMENTING AN ELECTRONIC THESES AND DISSERTATIONS (ETD) INITIATIVE WITHIN THE SOUTH AFRICAN CONTEXT

ISSUES AND CHALLENGES FOR HIGHER EDUCATION LIBRARIES

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Abstract

The end of 'Apartheid' in 1994 left Higher Education in South Africa with an unfair divide with two distinct groups, the so-called Historically Disadvantage Institutions (HDIs) and the ones that benefited from the ideology. This divide is still visible after eight years of democracy. In the South Africa context the term 'Higher Education' is predominately used to refer to learning that takes place in universities and technikons.

Numerous challenges like the depreciating currency (an effective devaluation of 73% in 2001), shrinking budgets, lack of IT infrastructure and skilled IT staff are making the implementation of ETD initiatives on an institutional level very difficult for these HDIs. Fortunately working together in consortia or being part of an international project like the Networked Digital Library of Theses and Dissertations (NDLTD) makes it possible for these Historical Disadvantage Institutions to make their theses and dissertation available electronically.

There are currently five regional and one national Higher Education library consortia in South Africa:

- the Gauteng and Environs Library Consortium (GAELIC) that was formed in 1996
- the Cape Library Co-operative (CALICO) which was established in 1993
- the Eastern Cape the South Eastern Academic Library System (SEALS) was established in 1988
- the Free State Libraries and Information Consortium (FRELICO) was formed in 1996
- the Eastern Seaboard Association of Libraries (ESAL) consortia in KwaZulu-Natal.

On 2 July 1999 at a meeting of representatives from these five regional Higher Education library consortia and other stakeholders, the Coalition of South African Library Consortia (COSALC) was established. The main operational and strategic focus of COSALC is at national level and is particularly committed to promote and support national co-operative initiatives.

This paper is based on a two year case study on the implementation of an Electronic Theses and Dissertations (ETD) pilot project at the Rand Afrikaans University. Special reference is given to the criteria that impact on the implementation of these kinds of initiatives in the South African context.

Introduction

Higher Education in South Africa can be categorized into two distinct groups: the Historically Disadvantage Institutions (HDIs) and the ones that benefited from the 'Apartheid' ideology, the so called Historically Advantaged Institutions. In South Africa the term 'Higher Education' is predominately used to refer to learning that takes place in universities and technikons (Letshela 1999). There are currently 22 universities and 15 technikons in South Africa. The number of institutions will change over the next few years as the National Plan for Higher Education's (NPHE) proposed mergers realise (Transformation 2002). The same plan also promotes the idea that Higher Education Institutions need to co-operate much closer (SAUVCA 2001).

In the early 1990's it became apparent that Higher Education institutions in South Africa could co-operate more effectively in consortia, especially when it came to the utilisation of resources such as shared databases and common applications. One such is the Foundation of Tertiary Institutions of the Northern Metropolis (FOTIM) currently consisting of 16 universities and technikons situated in the Gauteng region.

One of the projects of FOTIM is the Gauteng and Environs Library Consortium (GAELIC). The consortium was formed in 1996 to promote education, research and life long learning in Higher Education. This is achieved through the utilisation of technology, a common library SYSTEM, the sharing of resources, joint purchasing of expensive databases, skills development, and the sharing of expertise.

Within the GAELIC consortium, like the other consortia in South Africa, various Focus Area Teams (FATs) with their respective workgroups were established, which includes Information and Communication Technology (ICT), Strategic Management (SMT) and Information Resources (IR). These workgroups, representing both the Historically Disadvantaged Institutions (HDIs) and the Historically Advantaged Institutions (HAIs), work together to find constructive solutions to the challenges facing Higher Education and South Africa (Rensleigh 2002).

The Free State Libraries and Information Consortium (FRELICO) was formed in 1996. There are four universi-

ties, SASOL Library and Mangaung local municipality Library participating in the consortium. They have as mission to organise the relevant collections of the participating institutions into a single computerised SYSTEM that will provide optimal access to information and information resources.

Another consortium is the Cape Library Co-operative (CALICO) which was established in 1993. It is a co-operative venture between the five tertiary educational institutions of the Western Cape, three universities and two technikons. It forms part of the a group of projects administered under the direction of the Cape Higher Education Consortium, renamed from the Adamastor Trust in November 2001 (Alemna 2002). The vision of CALICO is to promote information literacy and to improve access to information in the Western Cape.

In the Eastern Cape the South Eastern Academic Library System (SEALS) was established in 1988. Their main focus areas are Information literacy, Human resources, Resource sharing and a common library SYSTEM.

Last but not least is the Eastern Seaboard Association of Libraries (ESAL) consortium in Kwazulu-Natal (Darch 1999). In total five regional academic consortia was formed. These make up South Africa's five regional Higher Education library consortia.

In July 1999 at a meeting of representatives from these five regional Higher Education library consortia and other stakeholders, the Coalition of South African Library Consortia (COSALC) was established. The main operational and strategic focus of COSALC is at national level and is particularly committed to promote and support national co-operative initiatives. One such is access to electronic information through the establishment of the South African Site Licensing Initiative (SASLI). SASLI's role will be to establish needs, negotiate licenses and prices with publishers, co-ordinate access, delivery and training, and to deal with other issues related to the cost-effective use of electronic information and -resources (Rensleigh 2002).

The Rand Afrikaans University Electronic Theses and Dissertations (ETDs) Initiative

As a member of the Gauteng and Environs Library Consortium (GAELIC) the RAU Library shares in the vision to create a virtual library with local service interfaces forming part of a global information community for clients in Gauteng and its environs.

During 1999 the Rand Afrikaans University (RAU) launched an Electronic Theses and Dissertations (ETD) initiative. This initiative formed part of the Library's evolving Digital Library project. With the background in-

vestigation of the ETD initiative it was ascertained that the Networked Digital Library of Theses and Dissertations (NDLTD) has an open invitation to aspiring members to join and be part of the international theses and dissertations project.

The first step of the RAU ETD initiative was to setup an Electronic Theses and Dissertations (ETD) workgroup. Key people representing the variance departments/sections of the University and Library were selected. This was done in order to gain input from, and to cover, all the areas in the University that will be influenced by the Electronic Theses and Dissertations initiative. The ETD workgroup met on a regular basis. The following are some of the concerns and issues that were addressed (Rensleigh 2000):

Academic considerations

- How will such a project influence the students and study leaders? Will the students be responsible for the creation of the electronic version of the document or will there be personnel assigned to do this on behalf of the students? A similar question exists regarding the creation of the keywords en abstract.
- Then there is the whole issue surrounding the copyright on the documentation. Will RAU have to relinquish its copyright claim? Will it be possible to show a disclaimer on the Web indicating that the copyright resides at RAU?
- What are the technical requirements of the electronic document? Does it have to be in a specific format like MS Word, Word Perfect or PDF? Will the entire document be published or only the abstract? Will the text (content of the document) be searchable? Can access to these documents be controlled, in other words, can access be limited to certain groups of people, like for instance only students registered at RAU (using a student number) or only people using RAU's computer facilities on the campus (using an IP address).

Administrative considerations

- The changing of the general regulations, such as the number of printed and electronic copies that need to be handed in for examination purposes will have to be looked at.
- How will the confidentiality clause that is applicable to certain research results be accommodated?

Information Technological considerations

- What are the requirements for the hardware (server, scanners, etc.) that will be used?
- What software is needed for the hosting of and the conversion of the original document to the required format?
- What will the impact be on the existing Information Technology infrastructure?

- What extra computer security measures, if any, are required?
- Which entry points (user access points) to the SYSTEM will be used: 1) The Internet. 2) The Library OPAC. 3) The Library Web OPAC (bRAUs)? What will the physical layout of the screens look like?

Personnel implications

- What will the impact of this initiative be on the existing personnel infrastructure?
- If it is decided to scan in retrospective work, how many personnel will be required for this part of the project and how many years back will be scanned in?

Financial implications

- For a lot of the concerns above there are financial implications. Potentially, the areas with the most significant costs are likely to be, the hardware and software needed and the additional personnel requirements.

In addition to the above concerns the role of the Library is discussed. The Library will play a variety of roles that will include the following:

Indexing of the Documents

- A detailed procedure will be determined for the correct indexing of these documents.

Giving access and making documents available to users

- The Library already has an existing client base consisting of students, lecturers, and external users.
- There is also an existing IT infrastructure (including the WEB OPAC) that can be used to gain access to the electronic documents.

Archiving of documents

- Currently a lot of physical space is being used for storage of the paperbound copies of these documents.
- The electronic version of these documents will take up a lot less space. For the interim both versions (paper and electronic) can be archived, but a cut-off date must be considered whereby only electronic versions will be archived.

The scanning of documents

- A decision needs to be made whether retrospective work will make up part of this project, in which case it must be scanned. The Library is already managing two other projects where scanners are being used, hence the scanning infrastructure that is available.

The RAU ETD Pilot Project

After the second meeting of the Electronic Theses and Dissertations (ETD) workgroup it was decided to launch a pilot project. Following is a brief discussion of the pilot project implementation plan.

Phase 1: Compile budget for the pilot project

The first phase of the implementation plan was to compile a budget for the pilot project. The budget reflected the financial implications concerning the hardware, software and personnel requirements. As this was a pilot project the capital layout was very small, less than R15 000.

Phase 2: Get go-ahead from Top Management

The second phase was to submit the budget and implementation plan to the university management and to get the go-ahead. The go-ahead was given and the pilot project was launched.

Phase 3: Send joining letter to the NDLTD

The next step in the implementation was to send an introduction letter to Virginia Tech (Prof. Edward A Fox) indicating that the RAU would like to join the NDLTD project. The letter is a standard template that is available on the NDLTD Website. There are a number of different joining possibilities:

- Category 1: The university currently requires ETDs
- Category 2: The university will in future require ETDs
- Category 3: Only part of the university requires ETDs
- Category 4: The University allows ETDs
- Category 5: The university is investigating ETDs
- Category 6: The university joins as part of a consortium
- Category 7: A non-university organisation

The RAU decided to go for the second category (The university will in future require ETDs). Once the introduction letter was sent to the NDLTD the free software courtesy of Virginia Tech was downloaded. The software to convert the documents into PDF, Adobe Acrobat version 5, was purchased.

Phase 4: Start awareness campaign

The next phase of the pilot project was to make students and lecturers aware of the project. This was done on a faculty, department and student bases. Three departments (Chemistry, Computer Science and Psychology) were nominated to take part in the pilot project. Other departments were encouraged to take part.

Phase 5: Configure the Web server

This phase of the project consisted of the procurement of the hardware (server and additional memory), the configuring of Linux as the operating SYSTEM and the loading of the Website. Once the Website was up and running it was connected to the RAU campus Internet infrastructure.

Phase 6: Update the RAU General Regulations

This phase entailed the identification and amendment of the applicable regulations and submitting the required amendments to the RAU Senate for approval. Only three regulations were effected (Regulation A.130.1, A.131, A.133). The senate approved the suggested changes and the amendments were printed in the General Regulations.

Phase 7: Setup the Web-based user interface

The Webpages were customised to reflect the RAU specific information, procedures and policies. This included the loading of the different departments as well as all the different masters and doctoral degrees that are applicable to the RAU. The copyright notice as well as the RAU logo were loaded onto the Website.

Phase 8: Archiving of the Theses and Dissertations

In this phase the internal Library procedures including the archival procedure was developed. The procedure details the internal Library workflow pertaining to the receiving of the theses and dissertations into the Library and giving access to users as well as the archival process. The Electronic Theses and Dissertations (ETDs) will be archived on DVDs and stored in the Library archive.

Phase 9: Generate ETD creation guidelines

During this phase guidelines for the creation of Electronic Theses and Dissertations were formulated. The documents give guidance to the students and study leaders on aspect of ETDs such as:

- The submission of the ETDs
- Acceptable formats
- Allocation of subject headings (keywords)

In addition to the guidelines, a submission document was created that the student needs to complete with the submission of the final, examined theses or dissertation. The form is used as a control mechanism by the Library when the documents are converted and loaded into the ETD database. In addition to the information that is needed by the Library, the submission form contains a declaration section whereby the student declare that the content of the thesis or dissertation is a true/final version of the examined document and that all the required amendments originating from the examination were made.

Phase 10: Load Theses and Dissertations into the Web database

During the first round (at the end of the first semester 2001) only 7 Electronic Theses and Dissertations were submitted by students. The second semester delivered 55 ETDs, a total of 62 for 2001. During the first semester of 2002 50 ETDs were submitted. Currently there are over 400 ETDs available. The Collection Development and Management Department's cataloguing section created a bibliographic record for each of the theses and dissertations. Once this has been done the loading of the database commenced. This process entails the conversion of the documents from the submission format into the PDF format. Each file had to be opened and converted. This is a very cumbersome process.

Phase 11: Marketing of the pilot project

This phase tried to increase the awareness of the ETD initiative. Meetings were held with the heads of Faculty Administration where the pilot project were discussed and promoted. A paper that promoted the RAU ETD initiative was delivered at the 2nd annual conference on World Wide Web applications (Rensleigh 2000).

Phase 12: Make available for use

Once the data was loaded into the database the Website was ready to be used. Although it is used only as part of the pilot project, not as an operational information resource.

Phase 13: Evaluate the pilot project

At the end of March 2002 the evaluation of the pilot project began. The various processes and procedures were examined and evaluated. The identified issues/concerns were classified according to the following:

Information Technology consideration

The pilot project free of charge Website software (used to manage the Electronic Thesis and Dissertations database) has a newer version of the software with additional functionality. In addition the existing SYSTEM does not make provision for a backup facility. The current server (upgraded desktop) has served its purpose as a pilot project server but is not adequate for a production SYSTEM and should be replaced. A proper server will have to be procured. The budget for the necessary hardware and software (capital) came to R 103 171 with an operational budget of R 8 208.

ETD submission process

The pilot project has indicated that the conversion process from the approved file formats (MS Word, WordPerfect, etc.) to the final PDF format is too cumbersome and labour intensive. It was suggested that the Adobe Acrobat conversion software is made available on campus and that the students convert the file themselves and that the submission regulations be amended so that the files must only be submitted in the final format which is PDF. This will eliminate the cumbersome and labour intensive conversion process.

The additional licences for Adobe Acrobat is plus minus R450 per licence. If the software is made available at the following points: Academic Departments (41), Faculty Offices (6), Centre for Distance Learning (1) and the postgraduate computer laboratories (2) the financial implications will be R22 250. In addition, documents containing information on how to use the conversion software will have to be made available to the students at the various points.

Document availability

The current process makes only the abstract freely available on the Internet. The full document is only available to the RAU staff and students on campus. Access is gained via personnel/student number and password. With the submission process two paper based unbound copies are submitted which are then bound by the RAU Bindery and made available on the open shelves which in turn are used by the Inter Library Loans Department (ILL). It was debated that the submission of the paper based copies should fall away. The conclusion was that the procedure should stay in place as many students (third world country) do not have access to computers and the Internet at home and that these students can then at least check out the bound copies to take home for study.

Conclusion

During the evaluation phase another option became available. SABINET have launched a project to create a national database containing full-text database of theses and dissertations. The software that is used is OCLC's Site Search. The way it will work is as follow: the institutions that are part of the project will have free access to the national database and those that are not part will pay a subscription fee. SABINET will provide the servers, software, maintenance and the labour to upload the documents. The copyright of the documents will still reside with the universities.

Although the RAU decided not to be part of the SABINET project and to stay independent, this is a very viable option from Historically Disadvantaged Institutions point of view. Numerous challenges like the depreciating (fluctuating) currency (an effective devaluation of 73% in 2001), shrinking budgets, lack of IT infrastructure and skilled IT staff are making the implementation of ETD initiatives on an institutional level very difficult for these HDIs. The findings of the case study as well as other research indicated that the chances of a successful implementation of an ETD initiative at a Historically Disadvantaged Institution will greatly increase with a Regional, National or International level implementation. In conclusion, the last two (National and International) levels of implantation will not by implication exclude any higher education institutions.

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